UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/759,808	01/16/2004	Greg Bearman	51669/DMC/C766	8261

23363 7590 03/27/2008

CHRISTIE, PARKER & HALE, LLP
PO BOX 7068
PASADENA, CA 91109-7068

EXAMINER	
TSAI, TSUNG YIN	

ART UNIT	PAPER NUMBER
2624	

MAIL DATE	DELIVERY MODE
03/27/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/759,808	Applicant(s) BEARMAN ET AL.	
	Examiner TSUNG-YIN TSAI	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 February 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12,14-36 and 38-54* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *53 and 54* is/are allowed.

6)☒ Claim(s) *1-12, 14-36 and 38-52* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAIL ACTION

Acknowledge of **Request for Continuous Examination (RCE)** received on 2/25/2008 and made of record.

Acknowledge of **RCE** pointing back to amendments submitted on 1/22/2008.

Acknowledge of **NO** amendments.

Response to Arguments

Applicant's argument – Page 2 regarding independent claim 1 recites a summing circuit designed to sum the modified inputs from the common pixel group in a single binning instruction to generate a scalar output for the pixel group, and independent claim 27 recites at least two summing circuits to sum the modified inputs from the associated one of the programmable circuitries to simultaneously generate a scalar output representative of the desired target. While Takahashi appears to be concerned with image compression, it fails to teach or suggest the aforementioned limitations of claims 1 and 27.

Examiner's response – Takahashi discloses in the abstract regarding a hardware system, like that of figure 10, that would carry image analysis of varies kind, such as JPEG-I/F receives JPEG or MPEG image data from ATM network. Where the memory size can be reduced using common coding unit and high-quality image data can be output independently **or whether or not input image data is coded**, **compress or not**, therefore Takahashi does not strictly teaches regarding image compression.

Takahashi teaches in the limitation of claims 1 and 27 regarding summing circuit (figures 3 and 7 discloses addition/summing circuits) designed to sum the modified inputs (figure 3 and 7 discloses part 1211 where all image process/modified data are input to the addition circuit) from the common pixel group in a single binning (figure 3 quantization circuit 1203 carry out the function of binning instructions, where quantization round up range to a value, which is seen as binning where certain range is define as a value) instruction to generate a scalar output (figure 3 Huffman coder 1205 and 1210 carries out the scalar output data and table) for the pixel group (figure 3 part 1201 and 1202 are the block that define the pixel group).

Applicant's argument – Page 2 regarding Furthermore, both claim 1 and claim 27 recite a summing circuit designed to generate <u>a scalar output for the pixel group.</u> The Examiner contends that Takahashi's Huffman coders 1205 and 1210 (figure 3) generate a scalar output. Applicants respectfully disagree.

Examiner's response – Takahashi teaches in the limitation of claims 1 and 27 regarding summing circuit (figures 3 and 7 expressly discloses addition/summing circuits) designed to sum the modified inputs (Figure 3 and 7 discloses part 1211 where all image process/modified data are input to the addition circuit) from the common pixel group in a single binning (figure 3 quantization circuit 1203 carry out the function of binning instructions, where quantization round up range to a value, which is seen as binning where certain range is define as a value) instruction to generate a scalar output

(figure 3 Huffman coder 1205 and 1210 carries out the scalar output data and table) for the pixel group (figure 3 part 1201 and 1202 are the block that define the pixel group).

Applicant's argument – Page 3 regarding all dependent claims are allowable by the argument above.

Examiner's response – Takahashi teaches all the limitations disclose by the applicant, such that all dependent claims are rejected as well.

Claim Rejections – 35 USC 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4,14-15,17-18, 26-30, 38-39, 41-43 and 52 are rejected under 35 U.S.C. 102(b) as being unpatentable over Takahashi (US Patent Number 5,805,933).

Takahashi disclose an image processing apparatus, image processing method comprising:

(1) Regarding claims 1 and 27:

at least one array of a plurality of pixels (figures 17-21, figure 34 shows array of plurality of pixels), each of the plurality of pixels selected to receive and read-out an input (figure 19, figure 34 showing array receive input and output data); wherein the pixel array is divided into at least one pixel group (figure 19 show pixel block arrange

for lightness signal processing, figure 30 show pixel block arrange for chromaticity single processing) for conducting a common predefined analysis (figures 29-31, figure 7 shows DCT circuit 1302, quantization circuit 1303, motion vector 1306 are common predefine analysis JPEG standards to deal with incoming data, column 6 lines 48-65 show predetermine predefine analysis for still images data, column 7 lines 37-49), wherein each of the pixel groups is comprised of at least two pixels (figures 17-21, figure 34 shows pixel arrays that are more than two pixels);

each of the plurality of pixels having a programmable circuitry (figure 7 shows a rate control circuit 1307 is seen as the circuitry that give user a programmable interface with control of pixels), in communication therewith (title, figures 10-12 show the data bus, LAN network that provides the communication between circuits), each of said circuitry being programmed with a dynamically configurable user-defined function (figure 10 part 1524 and 1525 show user input device that give the user ability for dynamic adjustments) such that each of said circuitry receives the input from the selected pixel and outputs a modified input (figure 3 show input of image data and output JPEG format, figure 4 show input of JPEG and output Image data, figure 7-8, figure 12B-C, figure 19, figure 21-22, figures 29-32, figure 34); and

a (or two, figure 3 part 1205 and 1210, figure 12C parts 214, 215 and 216 for 233m, 223c, 223y and 223k are seen as sort of multiple summing circuits) summing circuit (figure 3 addition circuit 1211, figure 7 addition circuit 1315,) in communication with the plurality of programmable circuits (figure 3 shows the

addition circuit is connected with the Huffman coder), said summing circuit designed to sum the modified inputs (figure 3 shows the addition circuit that is connected with Huffman coders to sum the result of both coders, figure 7) from the common pixel group (figure 3 block forming circuit 1201 for JPEG form common/standard 8x8 pixel block for analysis, figure 7 block forming circuit 1301) in a single binning instruction (figure 3 quantization circuit 1203 carry out the function of binning instructions) to generate a scalar output (figure 3 Huffman coder 1205 and 1210 carries out the scalar output data and table) for the pixel group (figure 19 and 30 show pixel group that are carrying out their instructed functions).

(2) Regarding claims 2 and 28:

wherein the pixel array is a one-dimensional array (column 7 lines 1-5 show that one-dimension array are subject to Huffman coding as well).

(3) Regarding claims 3 and 29:

wherein the pixel array is a two dimensional array (figure 9 show varies size of 2-D arrays, figures 17-18, column 6 lines 50-51 shows that pixels of 2-D array are subject to Huffman coding as well, column 7 lines 40-45 disclose that image will be restore to 2-D array).

(4) Regarding claims 4 and 30:

wherein the input comprises a spectrum selected from the group consisting of samples of interest from flowing streams, bead assays, cells, tagged cells, and raster-scanned static samples (figure 3-4, figure 7-8 disclose

spectrum of group of samples data from MPEG, which is seen as flowing stream, and raster-scanned static samples, which is seen as JPEG, figure 29 shows pixels, which is seen as cells, arrange for spectrum of lightness detection, figure 30 shows pixels, which is seen as cells, arrange for spectrum of chromatic detection).

(5) Regarding claims 14 and 38:

wherein each pixel from the array of the plurality of pixels (figures 17-21, figure 34 shows array of plurality of pixels) comprises a uniquely configured bandpass filter (column 14 lines 10-30 disclose filters are uniquely design for wavelength of Red, Green and Blue) and a detector (column 14 lines 10-30 disclose a CCD, which is seen as a detector).

(6) Regarding claims 15 and 39:

read-out of the received input (figure 10 part 1531 shows collected data to a system port 1528 without modification) is placed in a dynamically addressable random access memory (figure 10 shows that the system port 1528 access ROM 1506 and 1509 which are seen as dynamically addressable random access memory, figure 11 disclose more memory such as RAM 2605 inside the CODEC 1518) before the modification.

(7) Regarding claims 17 and 42:

wherein the programmable circuitry is integrated within the array of the plurality of pixels (figure 3, figure 7, column 6 lines 48-65 disclose that a 8x8 pixel block connected to a DCT circuitry).

(8) Regarding claims 18 and 43:

wherein the programmable circuitry is separately arranged from the array of the plurality of pixels (figure 10 shows that the CCD or APS 1531 is away from the CODED 1518 which is seen as the programmable circuitry, figure 11 disclose that that CODED 1518 is a separate unit that access data from the plurality of pixels from the SB).

(9) Regarding claims 26 and 41:

least one of the circuits selected from the group consisting of digital control (figure 10 CPU 1503), timing logic, analog processing (figure 10 1529 show analog writing to digital data, 1530 converter analog sound to digital data, 1531 the camera/CCD has A/D converter for digital data), and communication circuits (Figure 10 part 1502 and 1501 show the communication circuits for transferring data to the requesting circuits).

(10) Regarding claim 52:

wherein the at least two summing circuits (figure 3 part 1205 and 1210, figure 12C parts 214, 215 and 216 for 233m, 223c, 223y and 223k are seen as sort of multiple summing circuits), each of said summing circuits sequentially generates a single scalar output (figure 3 shows one singular scalar output after part 1221 sum up the result) representative of the plurality of targets (figure 3 block forming circuit 1201 break up the image data to 8x8, which is seen as plurality of target data block to compute and process).

Claim Rejections – 35 USC 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 5-10, 12, 16, 31-34, 36 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi (US Patent Number 5,805,933) in view of Buican et al (US Patent Number 5,117,466).

(1) Regarding claims 5 and 31:

Takahashi teaches all the subject matter discloses above.

Takahashi does not teach regarding fluorescence spectrum.

However, Buican et al teaches regarding fluorescence spectrum (abstract, column 1 lines 1-25, column 2 lines 25-67).

It would have been obvious to one skill in the art at the time of the invention to employ Buican et al teachings to Takahashi regarding fluorescence spectrum, such that using this spectrum would be the best way to detect quantitative information about the cell components as well as the physiological states of the cell (column 1 lines 1-25), thus, therefore extend the ability of this detector.

(2) Regarding claims 6 and 32:

Takahashi teaches all the subject matter discloses above.

Takahashi does not teach regarding different light scattering angles from the sample of interest.

However, Buican et al teaches regarding different light scattering angles from the sample of interest (column 3 lines 1-10).

It would have been obvious to one skill in the art at the time of the invention to employ Buican et al teachings to Takahashi regarding different light scattering angles from the sample of interest, such that with difference in scatter of wavelength it can easier to compare and determine portions of the samples to pre-selected spectral components (column 3 lines 1-10).

(3) Regarding claims 7 and 33:

Takahashi teaches all the subject matter discloses above.

Takahashi does not teach regarding spectrum comprises different Fourier frequencies of an image from the samples of interest.

However, Buican et al teaches regarding spectrum comprises different Fourier frequencies of an image from the samples of interest (column 1 lines 35-55, column 5 lines 25-45).

It would have been obvious to one skill in the art at the time of the invention to employ Buican et al teachings to Takahashi regarding spectrum comprises different Fourier frequencies of an image from the samples of interest, such that different Fourier frequencies of each different sample of interest will allow image enhancements into “virtual sorting” (column 5 lines 25-30), thus this method of sorting allow large numbers of subpopulation to be analyzed

simultaneously (column 5 lines 35-40) and not requiring physical sorting or storage (column 5 lines 30-35).

(4) Regarding claims 8 and 34:

Takahashi further teaches regarding spectrum comprises light spectrum (light spectrum is interpreted as in the visible light spectrum, figure 17A-17D and 18A-18E show the principle of lightness signal coding which is in the light spectrum, figure 20 show chromaticity signal processing which is in the light spectrum, column 14 lines 10-28 disclose CCD that process light spectrum in the Red, Green and Blue spectrum which is in the visible light spectrum).

(5) Regarding claim 9:

Takahashi teaches the subject matter regarding pixel.

Takahashi does not teach regarding the modification of the received input comprises cross-correlation of the received spectrum with the respective user defined function.

However, Buican et al teaches regarding modification of the received input comprises cross-correlation of the received spectrum with the respective user defined function (column 1 lines 45-47 show that the user is able to select the characteristic spectrum they desire, column 1 lines 59-68 to column 2 lines 1-2 discloses the benefit of fluorescence spectrum and its detection by pixel to pixel bases).

It would have been obvious to one skill in the art at the time of the invention to employ Buican et al teachings to Takahashi regarding modification of

the received input comprises cross-correlation of the received spectrum with the respective user defined function, such that the user defined function/selection of the spectral parameter will enhance specific samples of interest (column 1 lines 50-54) and would further simplify the difficulties of qualification of specific cell subpopulations in the sample (column 1 lines 60-63).

(6) Regarding claim 10:

Takahashi teaches the subject matter regarding pixel and serially summing (figure 3 addition circuit 1211,figure 7 addition circuit 1315) the product to generate the single scalar output (figure 3 Huffman coder 1205 and 1210, figure 7 variable-length coder 1304).

Takahashi does not teach regarding the cross-correlation comprises simultaneously multiplying the received spectrum with the user-defined function.

However, Buican et al teaches regarding cross-correlation comprises simultaneously multiplying the received spectrum with the user-defined function (column 1 lines 45-47 show that the user is able to select the characteristic spectrum they desire, column 1 lines 59-68 to column 2 lines 1-2 discloses the benefit of fluorescence spectrum and its detection by pixel to pixel bases, column 4 lines 22-32).

It would have been obvious to one skill in the art at the time of the invention to employ Buican et al teachings to Takahashi regarding cross-correlation comprises simultaneously multiplying the received spectrum with the user-defined function, such that the user defined function/selection of the spectral

parameter will enhance specific samples of interest (column 1 lines 50-54) and would further simplify the difficulties of qualification of specific cell subpopulations in the sample (column 1 lines 60-63), thus, therefore improve the image viewing by image enhancement by "virtual sorting" (column 5 lines 15-35).

(7) Regarding claims 12 and 36:

Takahashi teaches the subject matter above.

Takahashi teaches does not teach regarding user-defined function comprises a function to selectively pick out a spectrum of the desired target.

However, Buican et al teaches regarding user-defined function comprises a function to selectively pick out a spectrum of the desired target (column 1 lines 40-45 show that the user has the abilities to selectively pick a characteristic emission spectrum of the sample of interest).

It would have been obvious to one skill in the art at the time of the invention to employ Buican et al teachings to Takahashi regarding user-defined function comprises a function to selectively pick out a spectrum of the desired target. such that the user defined function/selection of the spectral parameter will enhance specific samples of interest (column 1 lines 50-54) and would further simplify the difficulties of qualification of specific cell subpopulations in the sample (column 1 lines 60-63), thus, therefore improve the image viewing by image enhancement by "virtual sorting" (column 5 lines 15-35).

(8) Regarding claims 16 and 40:

Takahashi teaches regarding detector and pixel groups having at least two pixels.

Takahashi does not teach regarding where each pixel group has a plurality of independent user defined functions associated therewith.

However, Buican et al teaches regarding each pixel group has a plurality of independent user defined functions associated therewith (column 1 lines 44-55 show that the user can define function, column 2 lines 50-60 shows pixels having been control by selected scanning means).

It would have been obvious to one skill in the art at the time of the invention to employ Buican et al teachings to Takahashi regarding user-defined function comprises a function to selectively pick out a spectrum of the desired target, such that the user defined function/selection of the spectral parameter will enhance specific samples of interest (column 1 lines 50-54) and would further simplify the difficulties of qualification of specific cell subpopulations in the sample (column 1 lines 60-63), thus, therefore improve the image viewing by image enhancement by “virtual sorting” (column 5 lines 15-35).

5. Claims 19, 21, 24, 25, 44, 46, 49 and 50-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi (US Patent Number 5,805,933) in view of Myrick (US Patent Number 6,529,276 B1,IDS).

(1) Regarding claims 19 and 44:

Takahashi teaches regarding programmable circuitries of the pixel group (figure 3 parts 1202, 1203, 1205 and 1211 are programmable circuitries for certain algorithm, figure 7 part 1315 and part 1305 are programmable circuitries for certain algorithm).

Takahash does not teach regarding a user-defined function template and inner product computational unit.

However, Myrick teaches regarding user-defined function template (column 10 lines 55-65 disclose system that can be calibrated and adjust for certain preference, column 12 lines 65-67 to column 13 lines 1-4 disclose a control system that is seen that can be user-define for certain preference, column 13 lines 28-35 disclose a computer device that controls which is seen that can be adjusted to fit a user's definition) and inner product computational unit (figure 2-6 part 52 shows a optical analysis system that does inner product computation, column 2 lines 55-65, column 8 lines 45-50)

It would have been obvious to one skill in the art at the time of the invention to employ Myrick et al teachings to Takahashi regarding user-defined function template and inner product computational unit, such that the user defined function/selection of the spectral parameter will enhance specific samples of interest and would further simplify the difficulties of qualification of specific cell subpopulations in the sample,thus, therefore improve the image viewing by image enhancement, where combine with inner product function such

received data will not be alter by magnitude of the original light signal (column 2 lines 55-65).

(2) Regarding claims 21 and 46:

Takahashi further teaches wherein the array of the plurality of pixels (figures 17-21, figure 34 shows array of plurality of pixels), the user-defined function template, and the inner product computational unit (figure 3 part 1205 and 1211, figure 7 part 1315 and part 1305) are integrated via connections between a plurality of chips (figure 3-4, figure 7-8, figure 10-12 disclose that the functionality is carry out between connection between plurality of chips).

(3) Regarding claims 24 and 49:

Takahashi further teaches the inner product computational unit (figure 3 part 1205 and 1211, figure 7 part 1315 and part 1305) performs inner product computation simultaneously during a signal integration time (figure 24 disclose the timing of the carry out process showing the computation in real time, column 23 lines 20-47 disclose coding processing, period signal processing and synchronization signal processing for 4x4 pixel data block).

(4) Regarding claims 25 and 50:

Takahashi further teaches wherein the inner product computational unit (figure 3 part 1205 and 1211, figure 7 part 1315 and part 1305) performs inner product computation prior to readout of the input (figure 3 shows how “image data” is process and computed before it results into the “JPEG Data” format,

figure 4, figure 7-8, column 23 lines 20-45 disclose how data is compile before output to hardcopy).

(5) Regarding claim 51:

Takahashi further teaches the user-defined function templates and the computational units (figure 3 disclose parts 1202-1211 which are all computational units, figure 4 parts 1212-1216 are all computational units, figure 7-8, figure 10-12) are two-dimensional (figure 17-18, column 6 lines 48-55 disclose that dimension that is been work with is that of a 8x8, thus is 2-D).

6. Claims 11 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi (US Patent Number 5,805,933) in view of Yiannoulos (US Patent Number 5,982,318).

(1) Regarding claims 11 and 35:

Takahashi teaches regarding plurality of pixel.

Takahashi does not teach regarding active pixel sensor.

However, Yiannoulos teaches regarding active pixel sensor (title, abstract, column 1 lines 34-40).

It would have been obvious to one skill in the art at the time of the invention to employ Yiannoulos teaching to Takahashi regarding active pixel sensor, such that active pixel sensor are compatible with standard VLSI technologies, are free of limitations with respect to scaling and to attaining very large size (column 1 lines 34-40).

7. Claims 20 and 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi (US Patent Number 5,805,933) and Myrick (US Patent Number 6,529,276 B1,IDS) as applied to claim 19 above, and further in view of Yiannoulos (US Patent Number 5,982,318).

(1) Regarding claims 20 and 45:

Takahashi and Myrick teaches regarding plurality of pixels, user-defined function template, and the inner product computational unit.

Takahashi and Myrick does not teach regarding it on the same chip.

However, Yiannoulos teaches regarding all those functions on the same chip (column 9 lines 5-10 discloses the plurality of pixels; which is seen as APS array, the comparator; which is seem as the user-defined function template, the clock and counter as the computational unit, which are all on the same silicon substrates).

It would have been obvious to one skill in the art at the time of the invention to employ Yiannoulos teaching to Takahashi regarding all those functions on the same chip, such that this method of manufacturing would keep the cost down (column 9 lines 5-10).

8. Claims 22 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi (US Patent Number 5,805,933) and Myrick (US Patent Number

6,529,276 B1,IDS) as applied to claim 21 above, and further in view of Jachimowicz (US Patent Number 5,821,911).

(1) Regarding claims 22 and 47:

Takahashi and Myrick teaches regarding wherein the array of the plurality of pixels, the user-defined function template, and the inner product computational unit are integrated via connections between a plurality of chips.

Takahashi and Myrick does not teach regarding bump bonding.

However, Jachimowicz teaches regarding bump bonding (column 4 lines 35-40).

It would have been obvious to one skill in the art at the time of the invention to employ Jachimowicz teaches to Takahashi and Myrick regarding bump bonding, such that it will allow greater number of semiconductor chips to be combined mechanically into a single array (column 4 lines 35-40), thus, therefore a single array will allow the designer more room to integrate other selected functions for personalization.

9. Claims 23 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi (US Patent Number 5,805,933) and Myrick (US Patent Number 6,529,276 B1,IDS) as applied to claim 21 above, and further in view of Warner, Jr. Et al (US Patent Number 5,937,318).

(1) Regarding claims 23 and 48:

Takahashi and Myrick teaches regarding wherein the array of the plurality of pixels, the user-defined function template, and the inner product computational unit are integrated via connections between a plurality of chips

Takahashi and Myrick does not teach regarding 3-D chip integration.

However, Warner, Jr. Et al teaches regarding 3-D chip integration (column 2 lines 50-60).

It would have been obvious to one skill in the art at the time of the invention to employ Jachimowicz teaches to Takahashi and Myrick regarding 3-D chip integration, such that the IC provides for greatly increase volumetric density, as well as improve reliability, where the reliability is the elimination of interfaces between dissimilar materials improving thermal properties (column 2 lines 50-60).

Allowable

10. The following is an examiner's statement of reasons of allowance:

Independent claims 53 and 54 are allowable over the prior art of the record. Independent claims 53 and 54 recited the limitation of user-defined function comprises a plurality of user-defined functions to selectively pick out the plurality of desired targets, the user-defined function being determined by Partial Least Square (PLS) analysis followed by eigenvector rotation, are neither disclosed nore suggested by the prior art of record.

The closest references of Buican, Myrick, Yiannoulos, Jachimowicz and Warner, Jr. I in the field of image processing and combining their teaching with

Takahashi does not teach where processing of the image data with Partial Least Square (PLS) analysis followed by eigenvector rotation.

Examiner's Note

Examiner suggests that combining the allowable claims with independent claims would precede the patent application faster rate to completion.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TSUNG-YIN TSAI whose telephone number is (571)270-1671. The examiner can normally be reached on Monday - Friday 8 am - 5 pm ESP.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on (571)272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tsung-Yin Tsai/

Examiner, Art Unit 2624

March 18, 2008
/Jingge Wu/
Supervisory Patent Examiner, Art Unit 2624